

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): ~~A visual~~Visual system, comprising:

a CCD or CMOS matrix having a sensitive area ~~divided into sub-areas, and~~

~~a plurality of optical devices each being designed for a specific function of scene~~
~~monitoring or detection of environmental parameters, said division being achieved thanks to~~
~~optical systems (imaging and non-imaging systems) with different directions and/or fields of~~
~~view and/or modes of optical separation of said sub-areas,~~

~~wherein said sensitive area of the matrix is divided into a plurality of separated sub-areas~~
~~designed for different specific functions, part of said sub-areas being dedicated to scene~~
~~monitoring and part of the sub-areas being dedicated to detection of environmental parameters,~~
~~said division being achieved by said plurality of optical devices.~~

2. (currently amended): ~~The system~~System according to claim 1, wherein ~~the system~~it is
~~installed in~~stalled in a motor vehicle, ~~for instance on the front portion (i.e. in driving direction)~~
~~of the inner rear-view mirror of the motor vehicle and performs, so as to perform one or more~~
functions among: rain detection, windscreen misting detection, fog detection, dusk detection,
tunnel detection, vehicle meeting detection, ~~and monitoring of the scene in front of~~before the
vehicle ~~(for instance lane warning, adaptive headlight, vehicle meeting).~~

3. (currently amended): ~~The system~~System according to claim 1, wherein the matrix is a linear or logarithmic, monochromatic (or color) VGA CMOS matrix.

4. (currently amended): ~~The system~~System according to claim 1, wherein at least one of the the matrix has its sensitive area divided into specific sub-areas is designed for front monitoring function, ~~for in-stance lane warning, for passive fog detection, for dusk detection, for tunnel detection and for active fog detection.~~

5. (currently amended): ~~The system~~System according to claim 4, wherein the sensitive area of the matrix also has a specific sub-area for rain and misting detection.

6. (original): ~~The system~~System according to claim 5, wherein the sensitive area of the matrix further comprises an additional specific sub-area for vehicle meeting detection.

7. (currently amended): ~~The system~~System according to claim 6, ~~characterized in that it is provided for~~ wherein ~~thea~~ a sub-area dedicated to ~~an active-rain detection functions with,~~ by means of an emitter.

8. (currently amended): ~~The system~~System according to claim 7, wherein said area dedicated to rain function is also dedicated to wind-screen misting function, ~~always by means of an emitter.~~

9. (currently amended): ~~The system~~System according to claim 8, wherein dusk function is performed by a specific sub-area of a CMOS matrix.

10. (currently amended): ~~The system~~System according to claim 9, wherein tunnel function is performed by using part of the area dedicated to front monitoring function.

11. (currently amended): ~~The system~~System according to claim 10, wherein fog function is performed both with a dedicated sub-area, with an active technique for local fog detection (~~i.e. by means of an emitter, for instance in form of LED or laser diode~~), and with passive technique for fog bank detection in another sub-area corresponding to the one dedicated to front monitoring or contained therein.

12. (currently amended): ~~The system~~System according to claim 11, wherein vehicle meeting function is performed by using two dedicated sub-areas or a sub-area dedicated to front monitoring, in a color matrix or in a monochromatic matrix by means of optical filter laid with a discretization degree at pixel level, though only in the area or sub-area of the matrix dedicated to front monitoring.

13. (currently amended): ~~The system~~System according to claim 1, wherein the matrix sensor has a protection window made of glass or transparent plastic, also acting as support for one or more optical fibers and, ~~if necessary~~, a prism carrying to selected sub-areas of the matrix an optical signal picked up by the latter.

14. (currently amended): ~~The system~~System according to claim 13, wherein said optical fibers have proximal ends fitted into holes made into said protection window.

15. (currently amended): ~~The system~~System according to claim 13, further comprising wherein it comprises means for optical insulation between the sub-area dedicated to front monitoring and the sub-area these dedicated to rain, misting, fog and dusk functions, the means for optical insulation partially based on a partial covering of a the surface of a the matrix protection window, on the side towards the matrix, with a layer of absorbing or reflecting material, ~~for instance by serigraphy or thermal evaporation.~~

16. (currently amended): ~~The system~~System according to claim 13, further comprising wherein it comprises means for optical insulation of the sub-area dedicated to rain function from the influence of other functions, said means for optical insulation including insulation being based on: 1) partial covering of prism faces with a layer of absorbing or reflecting material, and 2) a hole made into the optical window, in which the and covering of hole inner walls are covered.

17. (currently amended): ~~The system~~System according to claim 13, wherein a the sub-area dedicated to rain function receives the optical signal from an optical system comprising, in series, a prism with optical insulation, a filter and an objective with optical axis orthogonal to windscreen.

18. (currently amended): ~~The system~~System according to claim 13, wherein ~~at~~the sub-area dedicated to windscreen misting function receives the optical signal from an optical system comprising a prism with optical insulation, a filter and an objective with optical axis orthogonal to wind-screen.

19. (currently amended): ~~The system~~System according to claim 13, wherein ~~at~~the sub-area dedicated to dusk function receives the optical signal through an optical fiber.

20. (currently amended): ~~The system~~System according to claim 13, wherein ~~at~~the sub-area dedicated to tunnel function receives the optical signal through an objective dedicated also to front monitoring function.

21. (currently amended): ~~The system~~System according to claim 13, wherein ~~at~~the sub-area dedicated to fog function, based on active technique, receives the optical signal through an optical system comprising a ball or grin lens or even no lens at all together with an end of an optical fiber (~~output~~), possibly with another grin or micro-optical lens or even with no lens at all on the other end of the optical fiber (~~input~~), together with a high-pass/interferential filter, and a collection lens.

22. (currently amended): ~~The system~~System according to claim 13, wherein ~~a~~the sub-area dedicated to fog function, based on passive technique, receives the optical signal through an objective dedicated also to front monitoring function.

23. (currently amended): ~~The system~~System according to claim 13, wherein ~~the~~two sub-areas dedicated to vehicle meeting function receive the optical signal through filters together with an objective.

24. (currently amended): ~~The system~~System according to claim 13, wherein in the variant of vehicle meeting function based on the use of a sub-area dedicated to front monitoring in a color matrix or in a monochromatic matrix, the optical signal is collected by means of ~~a~~the same objective, which is dedicated to front monitoring function.

25. (currently amended): ~~The system~~System according to claim 13, wherein ~~a~~the sub-area dedicated to front monitoring function receives the optical signal through an objective with optical axis shifted with respect to matrix center.

26. (currently amended): ~~The system~~System according to claim 1, wherein some sub-areas are reserved for unused pixels necessary as additional separation between used sub-areas.